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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/743,768	01/18/2001	Ryo Ishii	108101	7723

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Oliff & Berridge  
PO Box 19928  
Alexandria, VA 22320

EXAMINER

ALPHONSE, FRITZ

ART UNIT PAPER NUMBER

2675

*16*

DATE MAILED: 10/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

*H.R.*

# Office Action Summary

Application No.

09/743,768

Applicant(s)

ISHII ET AL.

Examiner

Fritz Alphonse

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 28 May 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☐ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-6, 10, 11 and 14 is/are rejected.
- 7) ☐ Claim(s) 7-9, 12 and 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13. 6) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1, 3-4, are rejected under 35 U.S.C. 102(a) as being anticipated by Handschy (U.S. Pat. No. 6,317,112).

As to claim 3, Handschy (figs. 4-6) teaches about a method for driving an electro-optical device having a pixel arranged corresponding to an intersection where a scanning line and a data line cross in a plurality of driving frames (i.e., fields) to display an image with gray scale, the method comprising the steps of: dividing each driving frames into a plurality of subframes (note in figs. 5-15, Handschy teaches each frames is divided into a plurality of subframes; see col. 10, lines 1-7); setting each pixel to an ON state or an OFF state during a first subframe (see figure 5; col. 10, lines 66 through col. 11 line 18); and controlling the pixel depending on a gray scale level of the pixel as to whether to remain in the ON state or the OFF state of the pixels during a subsequent subframes (see col.3, lines 32-45).

As to claims 1 and 4, the claims differ from claim 3 by the additional limitations "feeding a binary signal for controlling the pixel to be in the ON state or an OFF state from the data line through

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the switching element to the electro-optical material and the storage capacitor, the capacitor holding the binary signal”.

However, Handschy (fig. 5) teaches that data writing arrangement 14 writes each pixel using a single binary bit to establish whether the pixel is in the ON or OFF state during each of the subframes (see col. 11, lines 7-10); note in figure 4 each pixel has a charge-storage capacitor for holding the signal (col. 8, lines 52-56).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5, 6, 10, 11, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Handschy in view of Yamaguchi (U.S. Pat. No. 6,222,515).

As to claims 5, 10, Handschy (figs. 4-8) show a driving circuit of an electro-optical device for driving pixels in a plurality of driving frames (F1, F2...etc), comprising data lines and scanning lines (52, 54), a pixel electrode having a switching element (col. 12, lines 2-11), an electro-optical material (col.8, lines 5-35), and a storage capacitor (56). Handschy teaches about a data writing arrangement 14 (which represents scanning line driving circuit) supplies a scanning signal that turns on the switching element in each of a plurality of subframes divided from one driving frame; and a data line

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driving circuit that supplies the data line with a binary signal controlling the pixel to be set to an ON state or an OFF state from the data line through the switching element to an electro-optical material and the storage capacitor (see figure 5; col. 10, lines 66 through col. 11 line 18), the storage capacitor holding the binary signal (see col. 11, lines 7-10); note in figure 4 each pixel has a charge-storage capacitor for holding the signal (col. 8, lines 52-56), and the binary signal setting the pixel to the ON state or to the OFF state so that a ratio of a period of voltage application time to set the pixels to the ON state to a period of voltage application time to set the pixels to the OFF state in each driving field is responsive to a gray scale level of the pixel (see col. 10, lines 8-19).

Handschy does not explicitly teach about a driving circuit comprising a pixel arranged corresponding to an intersection where the scanning line and the data line cross.

However, in the same field of endeavor Yamaguchi (fig. 2) shows an active matrix display comprising a pixel arranged corresponding to an intersection where the scanning line and the data line cross.

Therefore, it would have been obvious to one skilled in the art at the time of the invention to combine Yamaguchi with the active matrix type display device, as disclosed by Yamaguchi. Doing so would provide an apparatus for controlling the data voltage of a liquid crystal display unit that can realize a multiple gray-scale level display of high quality without increasing a circuit scale.

As to claims 6 and 11, the claims have substantially the limitations of claims 5 and 10. Therefore, they are analyzed as previously discussed in claims 5 and 10 above.

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As to claim 14, Handschy discloses an electronic equipment comprising an electro-optical device (col. 7, lines 34-43).

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Handschy in view of Yamaguchi as applied to claim 1 above, and further in view of Lewis (U.S. Pat. No. 6,040,812).

As to claim 2, Handschy does not explicitly teach about subfields divided from one driving field having time lengths long enough so as to feed different root-mean-square voltage to subfield. However, this limitation is disclosed by Lewis (col. 17, lines 30-41).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to improve upon the active matrix display with integrated drive circuitry, as disclosed by Yamaguchi. Doing so would provide good gray scale precision with simpler integrated circuitry that receives digital input signal.

#### *Allowable Subject Matter*

6. Claims 7-9, 12-13, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### *Response to Arguments*

7. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

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*Conclusion*

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kawaguchi et al. (U.S. Pat. No. 5,614,922) discloses an active matrix type display apparatus including a display medium made of an electro-optical material.

Tomiyasu (U.S. Pat. No. 5,712,651) discloses an apparatus for performing a full-color emulation on the TFT display device..

Kudo et al. (U.S. Pat. No. 5,861,863) discloses a method and apparatus for providing LCD device.

Ito (U.S. Pat. No. 6,446,594) discloses a method and apparatus for driving an electro-optical device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fritz Alphonse whose telephone number is (703) 308-8534. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

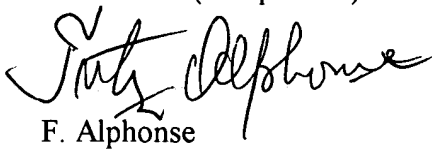
(703) 308-9051, (for formal communications intended for entry)

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Or: (703)308-6606 for informal or draft communications, please label  
"PROPOSED" or "DRAFT"

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA.,

Sixth Floor (Receptionist).

  
F. Alphonse

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October 16, 2003

  
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SUPERVISORY PATENT EXAMINER  
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